ST. LOUIS PUBLIC SCHOOLS

OUTLINE

— OF —

LESSONS IN COOKING

FOR THE

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DOMESTIC SCIENCE

These outlines of lessons in cooking for the eighth grade of the district schools have been prepared by a committee of the teachers of this subject. Teachers of Domestic Science are instructed to conduct the work in this study in accordance with these outlines.

BEN BLEWETT

Superintendent of Instruction

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INTRODUCTION

COOKING.

Food is cooked (1) to make it more attractive; (2) to make it more palatable; (3) to develop flavor; (4) to make it more easily digested; (5) to kill germs.

Cooking is derived from the Latin word "Coquo" meaning to boil, bake, seethe, dry or ripen. Cooking is done by the application of heat. Fruits and vegetables which are eaten raw have really been ripened or cooked by heat of the sun. Drying and ripening are nature's means of cooking. Drying in the sun was probably the earliest mode of cooking; then roasting before the open fire; next, baking in hot ashes, which was the primitive oven.

METHODS OF COOKING.

The main methods of cooking are boiling, stewing, steaming, broiling, roasting, baking and frying.

MEASURING.

Exact measuring is necessary to get the best results in cooking.

Flour, meal, powdered sugar, soda and baking-powder, should be sifted before measuring. All materials are to be measured level. Measure dry materials into a cup with a spoon, leveling the top with a knife. A cupful of liquid is all the cup will hold. A spoonful of liquid is all the spoon will hold. To measure butter, lard or any solid fat, pack solidly into the cup and level off with a knife. To measure a spoonful or cupful of dry substance, heap material on spoon or cup, lift it and level with the flat surface of a caseknife.

Half a spoonful is a spoonful divided lengthwise. Quarter of a spoonful is a spoonful divided into half crosswise and lengthwise. A speck is as much as will lie on the tip of a pointed knife.

ABBREVIATIONS.

spk.=speck.
tsp.=teaspoon.
tbsp.=tablespoon.
c.=cup.
g.=gill.
pt.=pint.
oz.=ounce.
lb.=pound.
min.=minute.
h.=hour.

EQUIVALENTS.

Measures.

3 tsp.=1 tbsp.
4 tbsp.=¼ c.
2 g.=1 c.
2 c.=1 pt.
2 tbsp. liquid=1 oz.
2 tbsp. butter=1 oz.

Weights.

2 c. liquid=1 lb.
4 c. flour=1 lb.
2 c. solid fat=1 lb.
2 c. granulated sugar=1 lb.
3 c. meal=1 lb.
2 c. solid meat=1 lb.
4 tbsp. flour=1 oz.
2 tbsp. sugar=1 oz.

In passing dishes from which a person is to help himself, pass always to the left side, so that the food may be taken with the right hand.

In passing individual dishes, such as coffee, etc., set them down carefully from the right side.

When the dishes are being served by a person at the table, the waitress should stand to the left, hold the tray low and near the table. Take on the tray one plate at a time, and place before the person for whom it is intended, setting it down from the right side.

When one course is finished, take the tray in the left hand, stand on the left side of the person, and remove with the right hand the soiled dishes, never piling them on top of each other.

Soiled dishes should be first removed, then food, then clean dishes, then crumbs.

Fill the glasses before every course.

Never fill glasses or cups more than three-fourths full.

Before the dessert is served, remove crumbs from the cloth either with a brush, crumb knife or napkin.

Do not let the table become disorderly during the meal.

The hostess should serve the soup, salad, dessert, coffee, and, at a family dinner the vegetable and entrees.

The host serves the fish and meat.

TO CLEAN ROOM AND TABLE AFTER A MEAL.

Brush up the crumbs from the floor. Arrange the chairs in their places. Collect and remove knives, forks and spoons. Empty and remove cups.

Never set any food away on dishes used for serving.

Pile all dishes of one kind together.

Brush the crumbs from the cloth and fold it carefully in the creases.

If the napkins are to be used again, place them neatly folded, in their individual rings.

FIRE-BUILDING.

FIRE.

Fire is heat and light produced by the union of the oxygen of the air with some combustible material.

FUEL.

Fuel is anything used to make a fire. The kinds commonly used are soft wood, hard wood, charcoal, bituminous coal, anthracite coal, coke, gas, gasoline, kerosene and alcohol. Electricity also is used for heating and cooking.

STUDY OF COMBUSTION.

Experiment 1. Light a small candle, notice the flame.

Experiment 2. Set a lamp chimney, supported on two blocks of wood, over the lighted candle. Notice the heat at the top. Hold a bit of thin paper above the chimney.

Experiment 3. Remove the blocks of wood; notice the flame.

Experiment 4. Cover the chimney with a piece of cardboard. What happens?

Experiment 5. Remove the cardboard and lower a lighted splinter inside the chimney. Is it air or another gas present?

Experiment 6. Light the candle and hold a glass plate just above the flame. What is soot?

Every stove must have at least two openings, one to supply air and another to allow the smoke, gases and watery vapor to escape through the chimney.

In a cooking stove there is a damper so arranged that the hot air is forced around the oven and heats it before reaching the chimney.

DIRECTIONS FOR BUILDING A COAL FIRE.

See that the lids are in place, close all the dampers, turn the grate, remove the ashes. Lay the fire, putting into the fire-box first a layer of crumpled newspaper or shavings, next dry kindling arranged crosswise, then coal to the top of the fire-box. (Why?) Brush the top of the stove, brush out the oven and around the stove. If it is needed, blacken the stove. Arrange the dampers as follows: The direct damper open, oven damper open, check damper closed, chimney damper closed. Light the fire and polish stove before it is hot.

When the coal is burning red, add another layer, not filling above the top of the fire-box. When this coal is glowing, close direct and oven dampers.

CHECKING THE FIRE.

Open the check draft and chimney draft. (Why?)

DIRECTIONS FOR LIGHTING A GAS STOVE.

To light a top burner, strike a match, turn the cock, apply the match.

The flame should be blue, a yellow flame does not give as much heat, smokes and wastes the gas.

To light the oven burner, open the door of the lower oven. Turn on the pilot light cock, lighting the pilot light from the outside. Turn on first one oven cock and then the other. When both are burning blue, turn off the pilot light.

The upper oven is used for baking and roasting, the lower for broiling, and toasting bread.

TO BLACKEN THE STOVE.

The stove may be blackened when starting a fire, or when the fire is out and the stove is almost cool.

Moisten some stove polish with cold water and rub it over the stove with a dauber. Use a dry brush for polishing, rubbing briskly. Polish back of the stove first.

If the stove is hot it cannot be made bright and will burn the brush.

LESSON I.

WATER.

KINDS.

Hard and soft. Hard water has mineral matter dissolved in it; soft water has little or none.

FACTS TO BE REMEMBERED ABOUT WATER.

Because of its solvent power, water is hardly ever found perfectly pure. It not only dissolves mineral matter, but also organic (animal or vegetable.)

Water which has been standing in pipes for any length of time should not be used for cooking or drinking purposes.

Water dissolves almost everything with which it comes in contact.

Hot water is a better solvent than cold.

Soft water should be used for cooking.

Slightly hard water may be softened by boiling. Boiling will also destroy germs.

Clear water becomes no hotter than 212°, consequently fuel is wasted in keeping up more fire than is required to keep the water at the boiling point.

Economize heat by keeping vessels covered.

Water expands in heating; if kettle is too full it will boil over.

Water loses dissolved gases in boiling, giving it a flat taste; replace them by beating in air.

Good drinking water is a clear, colorless, almost tasteless, odorless liquid, free from disease germs, and contains a small amount of mineral matter.

Temperatures Used in Cooking.

Test with a thermometer.

(a.) Luke warm, 98°; body heat.

(b.) Scalding, 150°; too hot to keep fingers in.

(c.) Simmering, 185°; small air bubbles appear at bottom and sides of vessels. A movement of water.

(d.) Boiling, 212°; large bubbles appear on the surface, all over the water; break; steam escapes.

(e.) Freezing, 32°; water changes to ice.

USES TO THE BODY.

Water constitutes about two-thirds of the body, consequenty we allow about four pints daily, part of which we drink and part of which is in our food.

Water quenches the thirst, dissolves and helps digest the food, carries off waste products and keeps the temperature normal.

TEA AND COFFEE.

Tea and coffee are not foods, but beverages that have a stimulating effect on the nerves; they relieve fatigue and prevent tissue from wearing out.

Do not drink too much or too strong tea or coffee; this applies especially to young people. Tea is valued for its **theine,** coffee for its **caffeine.** Both contain tannin, a bitter substance very injurious to the stomach. Boiling tea, or letting tea or coffee stand longer than five minutes on the leaves or grounds, will extract this tannin.

GENERAL RULES.

1. Keep tea and coffee in closely-covered jars. Buy coffee unground.
2. Do not use tin tea or coffee pots.
3. Scald tea and coffee pots before using.
4. Use freshly boiled water in making tea and coffee.
5. Stir tea before serving and serve with cream or lemon juice.
6. Serve coffee with cream or hot milk.

TEA.

Put the tea in a scalded tea pot and pour the boiling water over it. Steep five minutes. Strain and serve either hot or iced.

1 tsp. tea, 1 c. boiling water.

BOILED COFFEE.

Mix the coffee with one tablespoonful of cold water. Add boiling water and boil three minutes. Remove to back of the stove, add another tablespoonful of cold water and settle five minutes. An egg or crushed eggshells may be mixed with the coffee to help clear it.

1 c. ground coffee, 1 c. cold water, 1 egg shell, 6 c. boiling water.

FILTERED COFFEE.

Put the coffee into the upper part of a scalded filter coffee pot and pour the water slowly through it. The coffee pot must be kept hot while the coffee is being made.

1½ tbsp. finely ground coffee, 1 c. boiling water.

COCOA.

Mix the cocoa, sugar and salt with the water and boil five minutes. Stir this into the hot milk and cook in the double boiler one-half hour.

3 tbsp. cocoa, 3 tbsp. sugar, ¼ tsp. salt, 2 c. water, 2 c. milk.

LESSON II.

FRUIT.

Experiment 1. Grate and squeeze an apple.
What does so much juice mean?
What makes the apple hard?
Experiment 2. Taste the apple.
What substances does it contain?

With a few exceptions, fresh fruit has little nourishment in it, but is nevertheless an essential food. Fruits contain a large amount of water, cellulose, some sugar and mineral salts, and are eaten for their delicious flavor, refreshing juices and mineral compounds.

These mineral salts supply elements which are essential to pure blood, and for this reason fruit should form an important part of our diet, especially in the summer.

METHODS OF COOKING USED IN THIS LESSON.

Baking is cooking in an oven by the application of heated air.

Stewing is cooking for a long time in water usually below the simmering point.

RULES FOR STEWING DRIED FRUIT.

Wash the fruit well in several waters; cover with cold water and soak several hours or over night. Cook in the same water in a stew pan until tender.

Sweeten to taste and cook five minutes longer. If the syrup is too thin, remove the fruit and allow the syrup to cook until thickened; then pour over the fruit.

STEAMED APPLES.

Core and pare sound, tart apples.

Place on a plate in a steamer, and allow to steam until tender. Arrange on a glass serving dish and pour syrup over them.

SYRUP.

Amount for eight apples. Cook the sugar and water together, without stirring, for five minutes.	1 c. sugar ⅓ c. hot water.

STEWED PRUNES.

Cook prunes according to general directions for stewed fruit. Flavor with the sugar and sliced lemon.	1 lb. prunes, 2 tbsp. sugar, 1 lemon.

BAKED APPLES.

Select sound tart apples. Wash, remove the core, and if the apples are thick-skinned, they should be pared.

Place in an earthenware or granite baking dish and pour one tablespoonful sugar mixed with a little spice, into the cavity in each apple. Pour enough boiling water around the apples to cover the bottom of the baking-dish, and bake until soft, in a hot oven, frequently dipping the syrup in the pan over the apples.

Serve hot or cold, with milk or cream.

LESSON III.

GREEN VEGETABLES.

Vegetables are various parts of plants used as food, and are generally seasoned with salt and eaten with meat.

There are two classes of vegetables—those growing underground, such as potatoes and carrots, and those above ground, or green vegetables, such as lettuce and spinach.

Vegetables are an economical food when used in season and are a very necessary part of the diet, as the mineral salts which they contain are needed by the body. In cooking vegetables rich in minerals, such as spinach, peas, oyster plant, etc., a small amount of water should be used, so that the minerals may not be lost by dissolving in the water.

The woody part of the vegetable is called cellulose. This is not digestible, but important, as it gives bulk and is suitable to combine with such concentrated foods as eggs and milk.

If possible, at least two vegetables should be found in every dinner, and vegetables should form a large part of our diet in the spring and summer months when they are plentiful.

Many vegetables, such as celery and lettuce, which are rich in mineral salts, should be eaten raw.

RULES FOR COOKING VEGETABLES.

1. Use vegetables which are in season, and select medium-sized or small, rather than large, vegetables.

2. Wash thoroughly in cold water, and, if wilted, allow to soak until freshened.

3. Green, above-ground vegetables should be cooked in boiling salted water, uncovered, using two teaspoonfuls of salt to one quart of water.

4. Underground vegetables should be cooked in boiling water, covered.

5. Strongly-flavored vegetables, such as cabbage and onions, should be cooked uncovered. Change the water every ten minutes in cooking onions.

6. Vegetables should be cooked only until tender, and served plain, with salt, pepper, butter and milk, or with a white sauce.

SCALLOPED TOMATOES.

Prepare according to the rule and bake 1 hour, cover 30 minutes.

1 can tomatoes, 1 tbsp. salt, 3 c. crumbs ¼ tsp. pepper, 3 tbsp. butter.

Name	Preparation.	Method of Cooking.	Time.	Serving.
Asparagus	Wash and peel stalks. Cut off tough portion. Tie in a bunch and stand upright in cold water until ready to cook.	Stand upright in a deep kettle. Pour on enough water to cover all but tips. Cover tightly and boil till tender. Add salt when nearly done.	About 45 min.	Add butter and seasoning. Serve on pieces of buttered toast moistened with the cooking water.
String Beans	Wash and remove strings.	Add boiling water to cover and cook until tender. When nearly done add salt. A small piece of bacon may be boiled with them.	Young beans, 1 hour. Old beans, 2 to 3 hrs.	Season with butter and pepper.
Beets	Wash and cut off tops about one inch above root. If skin is broken the beet will lose in color and flavor.	Cook in boiling water until tender. Salt half an hour before serving.	Young beets, 1 hour. Old beets, 4 to 5 hrs.	Remove skins and slice. Season with butter, salt and pepper.
Cabbage	Remove outer leaves and stalk. Separate leaves and wash thoroughly.	Drop slowly into salted boiling water and cook only until tender.	20 to 30 min.	Drain and season with butter, salt and pepper, or mix with white sauce.
Carrots	Wash, scrape and cut into half-inch cubes.	Boil until tender.	Young carrots, 20 to 30 min. Old carrots, 30 min. to 1 hr.	Season with butter, salt and pepper, or mix with thin white sauce.

Name.	Preparations.	Method of Cooking.	Time.	Serving.
Peas	Wash pods and shell.	Cover with boiling water and cook until tender. Add salt 10 min. before done.	About 35 min.	Serve without draining. Add butter, salt and pepper. If lacking in sweetness, a little sugar may be added.
Spinach	Remove roots and stems, and wash thoroughly through several waters.	Cover bottom of pan with water, place spinach in pan and heat gradually to draw out the juices. Cook until tender. Drain and chop.	About 15 min.	Season with butter, salt and pepper. Garnish with slices of hard boiled egg.
Summer Squash	Wash, cut into pieces, and pare.	Steam by placing in steamer or strainer over boiling water.	About 30 min	Mash. Season with butter, salt and pepper.
Tomatoes	Remove skins by placing for a minute in boiling water.	Boil gently.	About 20 min.	Season with butter, salt and pepper.

LESSON IV.

POTATOES.

Potato—A tuber. Class of green vegetables.

They are grown by planting a piece of potato containing two or more eyes.

EXPERIMENT TO DETERMINE COMPOSITION.

Experiment 1. Grate. Press in a cheese cloth. Let water stand and dry the fiber.

Experiment 2. Cornstarch, salt, sugar, etc., in test-tubes; add water. What happens? Add solution of iodine. What happens?

Experiment 3. Add a few drops of iodine solution to the sediment obtained from potato water. What do you know it to be?

Experiment 4. Boil some of the liquid in a test-tube. What do you see?

COMPOSITION.

1. Water—75%; fills cells.
2. Starch—Chief foodstuff in potatoes.
3. Woody fibre (cellulose), not of a nature to be digested.
4. Potash, salts and other mineral matter, lying mostly just beneath the skin.

BAKED POTATOES.

Medium-sized. Scrub with a brush. Bake in a moderate oven on a grate until soft—about forty-five minutes—turning occasionally. When done, press in a cloth until skin breaks, to let steam escape. Serve folded in a napkin or in an uncovered dish.

STUFFED POTATOES.

Bake large potatoes. Cut lengthwise through the center, remove the inside of the potato, mash, season, return to the shell and brown.

6 baked potatoes, 2 tbsp. butter, ¼ c. hot milk, ½ tsp. salt and ⅛ tsp. pepper, whites of 2 eggs beaten stiff, or one whole egg.

LESSON V.

POTATOES. Continued.

Potatoes have no decided flavor, and can be cooked in such a variety of ways that we can eat them every day and not tire of them.

They are not very valuable as a food if eaten alone, but with meats, etc., they are most important as an article of diet.

Potatoes are a heat and energy producing food.

They are in the best condition for use in late summer and autumn.

New potatoes are wholly indigestible, for the starch in them is unripe.

Old or poor potatoes should be soaked before using. Sprouting potatoes should not be eaten. Why?

BOILED POTATOES.

Select potatoes of uniform size, scrub, and remove all spots. Pare off a strip of the skin of each one. Put them into boiling salted water, and boil gently about 30 minutes, or till tender when tried with a fork. Drain off the water; shake the pan over the fire, to make the potatoes dry and mealy. Peel off the skins, and serve in a hot, uncovered dish.

MASHED POTATOES.

Mash potatoes in a hot pan, add seasonings and hot milk. Beat with a fork to make white and light. Heap on a hot dish without smoothing the top.

If desired, place the dish on the grate of a hot oven, to brown the top.

1 pt. hot boiled potatoes, or six medium-sized ones, ½ tsp. salt, 1 spk. pepper, 1 tbsp. butter, about 3 tbsp. milk.

CREAMED POTATOES.

Cut potatoes into cubes, and put in a double boiler. Add seasonings, and cover with hot milk. Cook until milk is absorbed —at least three-quarters of an hour. Add butter and parsley. Serve at once.

6 boiled potatoes, salt and pepper to taste, hot milk to cover, 1 tbsp. butter, 1 tbsp. chopped parsley.

LESSON VI.

CEREALS.

Cereals are grains of grasses, the seeds of which are used for food.

KINDS.

Wheat, oats, Indian corn, rye, barley, rice, buckwheat; from these are prepared the various breakfast foods.

COMPOSITION.

Starch, cellulose, protein, mineral salts, fat, water.

FOOD VALUE.

They are important foods, rich in tissue building substances.

Oatmeal and cornmeal contain more fat than other grains; are good winter foods.

Rice contains more starch and less fat than any other grain; good food for tropical countries, and one of the most easily digested of starchy foods; good to combine with milk, eggs, etc.

DIRECTIONS FOR COOKING CEREALS.

1. Stir cereals gradually into the required quantity of boiling water, allowing 1 teaspoonful salt to each cup of cereal. It is boiled to soften cellulose and swell starch. Salt is added to give flavor.

2. Fine granular cereals, mix with cold water to keep them from lumping.

3. Stir coarse, flaky cereals with a fork.

4. Prepared cereals, cook twice as long as directed on package.

Cook rapidly at first, directly on the stove, about ten minutes. Then place over boiling water, and cook thirty minutes longer.

5. To save time, soak coarse cereals in cold water before cooking.

6. Serve cereals with milk or cream, to supply fat. For variety, stir into cereals, figs or dates, cut into pieces, before serving. Or serve with baked or steamed apples. Eat something solid with cereals. Why?

7. Cereals may be served as a breakfast dish, vegetable or dessert.

STEAMING.

Steaming heat is applied by means of steam. It is a form of boiling.

1. Cooking in a double boiler; the upper one, holding the food, fits tightly half-way down into the lower one, which contains the boiling water.

2. Cooking in a steamer or covered pan with perforations in the bottom. This is placed over boiling water, the food is kept out of the water, but in direct contact with the steam.

3. Cooking in a covered mould, which is placed in a kettle of boiling water on a trivet or muffin-ring, allowing the water to be under, as well as around it. The kettle should be closely covered, to keep in the steam, and the water kept boiling steadily the required time.

Steaming is the most economical way of cooking.

TABLE FOR COOKING CEREALS.

Kind.	Quantity	Water.	Time.
Rolled Oats	1 cup	2 cups	30 min.
Rice (steamed)	1 cup	2¾ to 4 cups (according to age of rice.)	40 to 60 min.
Cornmeal	1 cup	3½ cups	2 hours
Oatmeal (coarse)	1 cup	4 cups	3 hours
Hominy (fine)	1 cup	4 cups	1 hour
Wheatena, etc.	1 cup	3¾ cups	30 min.

CORNMEAL MUSH.

Boil ten minutes, stirring constantly and 3 hours longer over boiling water.

4 c. boiling water, 1 tsp. salt, 1 c. cornmeal.

TO COOK RICE.

Wash the rice well through several waters, to remove floury coating and drain it. When the salted water boils rapidly drop in the rice slowly, so as to not stop the boiling, and let it cook uncovered from fifteen to twenty minutes. If the grains are soft when pressed between the fingers, they are done. Then turn into a strainer to drain, rinse with hot water and dry in a serving dish in the open oven. Each grain should be separate and dry. The motion of the water keeps them separate and the washing and rinsing removes the loose starch which has a tendency to make the grains stick together. Rice cooked in this way may be served as a vegetable.

1 c. rice, 2 qts. water, 1 tsp salt.

LESSON VII.

USES OF STALE BREAD.

Experiment 1. Put some flour in a small frying-pan over a low fire and stir as it heats. What happens to it?

Experiment 2. Put some of this browned flour in water and boil. Does it grow thick? Why not? Test with iodine. Do you get the blue color? Give the reason for the fact you observe.

DEXTRINE.

Whenever starch is heated to 320 degrees a new substance, named dextrine, which somewhat resembles sugar, is formed. Dextrine differs from starch, in that it dissolves in water, does not thicken mixtures or give a blue color with iodine. Dextrine is found in the crusts of bread and cake and in baked potatoes. Also in prepared foods, like Grape-nuts and Force.

By digestion, foods are rendered soluble. Toasted bread is more digestible, and therefore has a higher food value than fresh bread, partly beecause it breaks up into small pieces very readily, but chiefly because much of the starch has been changed to dextrine.

TOAST.

Cut stale bread into slices one-fourth of an inch thick. Put them into a toaster, move it gently over the fire until dry, then allow it to become a light brown by placing it nearer the heat and turning it constantly. A hot, clear fire should be used in toasting.

CROUTONS.

Cut pieces of stale bread into one-third inch cubes, and brown in the oven. Stir with a spoon occasionally, so that they will brown evenly. Serve with soup.

DRIED BREAD CRUMBS.

Crusts and small pieces of bread should be dried in a cool oven. Roll them on a pastry board or put them through a meat grinder. Crumbs must be sifted. Use them to cover articles of food to be cooked in deep fat, for the top of scalloped dishes, in making dressing for poultry, etc. Crumbs should be kept in jars with a piece of muslin tied over them.

HOT CABINET PUDDING.

Butter a mould, using all the butter, sprinkle sides and bottom with currants. Lay the bread crumbs in the moulds in layers, with the raisins between the layers. Beat the eggs; add sugar, salt and nutmeg, then the hot milk. Pour this mixture over the bread. Let stand in a cold place an hour, and then steam one hour; steam one-half hour if moulded in cups. Turn out on a platter, serve with cream or hard sauce. This pudding may be baked by placing the mould in a pan of water in a moderate oven. Do not allow the water in the pan to reach the boiling point. For chocolate pudding omit the raisins, currants and nutmeg, and use instead one ounce of chocolate melted over hot water, or two tablespoonfuls of cocoa.

Four c. hot milk, 2 c. bread crumbs, 2 eggs, 2 tbsp. butter, ¼ c. sugar, 1 c. raisins, ¼ c. currants, ¼ tsp. salt, ¼ tsp. nutmeg.

BROWN BETTY.

(Scalloped Apples.)

Fill a quart pudding dish with alternate layers of sliced apples and bread crumbs. Season each layer with bits of butter, a pinch of ground cinnamon, cloves and allspice. When the dish is full, pour over it a half cup each of molasses and water mixed. Cover the top with crumbs. Place the dish in a pan containing hot water, and bake three-quarters of an hour, or until the apples are soft. Serve with cream or any sauce. Raisins or chopped almonds may be added.

Apples to fill quart dish. Bread crumbs, ½ c. molasses, ½ c. water.

LESSON VIII.

SUGAR.

Sugar is made for common use from sugar cane, sugar beets and maple sap. This sugar is called sucrose. Honey is the purest natural form of sugar.

Glucose, or grape sugar, is found in honey, fresh fruits, and on the skins of dried fruit, such as raisins, dates, etc. It is also made for commercial use from the starch of corn.

The sugar of milk is called lactose.

Sugar made from sugar cane and sugar beets is the kind most commonly used. The products of sugar cane are molasses, brown sugar, granulated, cut-loaf, powdered and confectioners' sugar.

Only white sugar is made from beets.

Sugar is very easily digested, as it dissolves so rapidly. It is a very necessary food when taken in small quantities. It produces heat and energy in the body; children, being more active than grown people naturally crave more sweets.

EVIL EFFECTS OF TOO MUCH SUGAR.

If sugar in any form is left on the teeth, it will ferment, and cause them to decay.

If too much is eaten at one time, part of it will ferment in the stomach and interfere with the digestion of other foods.

EFFECTS OF HEAT ON SUGAR.

Experiment 1. Heat a little sugar in a test-tube. Notice the changes. What forms on the side of the tube? Place a lighted match at the top of the tube. What is burning and what is the color of the flame? What is left in the test-tube?

Sugar is heated to different degrees for different kinds of candy.

Soft Ball.—When a little is dropped in cold water, and can be rolled into a soft ball.

Thread.—When a little is dropped from a spoon and spins into a fine thread.

Hard Ball.—When dropped into cold water and becomes hard.

The Crack.—When tried in cold water and becomes brittle.

FUDGE.

Boil sugar, chocolate (or cocoa) and milk together till it reaches the soft ball stage. Remove from fire, and add butter and flavoring. Beat till creamy and thickened. Pour quickly into a greased tin. When firm, cut in squares.

2 c. sugar, 1 c. milk, 2 tbsp. butter, 1 tsp. vanilla, ¼ 2-oz. cake bitter chocolate, or 4 tbsp. cocoa.

PENOCHE.

Boil sugar and milk to the soft ball stage. Remove form the fire; add butter, flavoring and nuts. Beat till creamy and thickened; pour into a greased tin, and when firm cut into squares.

2 c. brown sugar, ¾ c. milk, 2 tbsp. butter, 1 tsp. vanilla, 1 c. chopped nuts.

PEANUT BRITTLE.

Break peanuts in pieces, or chop them. Line a greased pan with peanuts. Put sugar in saucepan, and heat till it becomes a thin, light brown syrup, stirring constantly. Pour over peanuts, and mark in squares. When cold, break in pieces.

2 c. sugar ½ to 1 c. shelled peanuts.

MOLASSES CANDY.

Boil until it is brittle when tried in cold water. Pour in a buttered pan, when cool pull until light colored.

2 c. molasses, 1 c. sugar, 1 tbsp. vinegar, 1 tbsp. butter.

COOKED FONDANT.

Boil all together until it makes a soft ball when tried in cold water. Turn out on large platter, and when cool work it until creamy. Divide into portions and flavor to taste. Shape into chocolate creams, cream dates, nut creams and bonbons.

2 c. sugar (fine granulated), ⅔ c. cold water, ⅛ tsp. cream of tartar.

LESSON IX.

MILK.

ANALYSIS OF MILK BY EXPERIMENTS.

Experiment 1. Drop a little cream on unglazed paper. Can you tell from spot one food stuff that is present in milk?

Experiment 2. Test a little milk with iodine. Is there any starch in milk?

Experiment 3. Boil some; something in the milk changes and forms a skin on top.

Experiment 4. Add an acid. What happens?

Experiment 5. Warm some milk in test-tube to the temperature of the body, add a few drops of rennet; after standing it separates into a liquid called whey, which contains the sugar, water, salts and albumen of the milk, and a solid called curd, which contains the chief protein in milk called casein and fat.

COMPOSITION.

Water, casein, albumen, fat, sugar, mineral salts.

FOOD VALUE.

Milk is often spoken of as a "perfect food," and it is so for infants, as it contains all the elements necessary for the nourishment of the body; but after growth is attained, and the individual requires that which will repair the tissues and furnish heat and energy, milk ceases to be a complete food.

Albumen, Casein } Tissue Builders.

Cream, Sugar } Heat and force producers

Mineral Salts } Bone Structure.

Water—solvent for all.

MILK PRODUCTS.

Cream, butter, buttermilk and cheese. Whey and milk sugar are also products of milk. Fat is found in milk suspended in little spheres. They are lighter than the rest of milk, and rise to the top as cream. If cream is shaken or beaten, the spheres lose shap, stick together and form butter. Salt is added to prevent spoiling.

CHEESE.

Curd of milk, drained, salted and pressed.

FACTS TO BE REMEMBERED ABOUT MILK.

1. Milk is not a drink, but a food; less of other food should be eaten at a meal if you have milk.
2. Drink it slowly, much milk swallowed suddenly forms a large lump and the gastric juice can only get at the outside.
3. Milk easily absorbs odors and other impurities; always keep in clean glass, earthenware or tin vessels.
4. Boiling milk makes it less digestible. Why should not milk be boiled?
5. We coagulate milk with rennet and make a dessert.

JUNKET PUDDING.

Heat milk in double boiler till luke-warm, add sugar, salt, vanilla and tablet that has been dissolved in one tablespoonful of cold water. Let stand in a warm place undisturbed till it thickens. Then cool. Serve with whipped cream or fruit.

1 quart of milk, 4 tbsp. sugar, 1 junket tablet, 1 tsp. vanilla, ¼ tsp. salt.

WHIPPED CREAM.

Whip cream with a wire whisk or a Dover beater until stiff enough to hold its shape. Keep in a cool place till served.

In warm weather, set the bowl of cream in a pan of cracked ice while whipping it.

½ pt. cream, 2 tbsp. powdered sugar, ½ tsp. vanilla.

CORNSTARCH MOULD.

Heat milk, mix cornstarch, sugar and salt together, add hot milk slowly, stirring all the while. The cornstarch should become thick at once; pour into double boiler and cook twenty minutes, remove from fire, add flavoring, turn into a mould that has been wet with cold water, cool and serve with cream and sugar.

For chocolate pudding, 2 tbsp. of cocoa may be added to the cornstarch.

1 c. milk, 4 tbsp. cornstarch, 4 tbsp. sugar, ¼ tsp. salt, 1 tsp. flavoring.

STERILIZED MILK.

Fill small-necked one-pint bottle to one and a half inches of the top with milk; cork with absorbent cotton.

Put into a steamer of cold water, having the water well around the bottles. Allow the water to heat gradually until 185°, and keep at this temperature for one hour. Then the bottles are removed, cooled quickly and placed in a refrigerator.

LESSON X.

MILK OR CREAM SOUPS, WHITE SAUCE.

Cream soups are a combination of white sauce and strained vegetable pulp.

The vegetables most commonly used are peas, beans, lentils, potatoes, corn, celery, spinach and asparagus. Old and tough vegetables may also be used in making these soups, as the old and tough part is sifted out.

Cream soups are economical and nourishing and should be served frequently, but are too rich to precede a heavy meal. For this reason they are better served at lunch than at dinner.

GENERAL DIRECTIONS FOR MAKING CREAM SOUPS.

The proportions generally used are two or three cups sifted vegetable pulp; two tablespoonfuls butter, two tablespoonfuls flour, one-half teaspoonful salt, one-eighth teaspoonful pepper.

Cook the vegetables until very tender, press through a strainer and add the sifted pulp to the hot milk.

The butter and flour should be mixed to a smooth paste and stirred into the hot liquid. Cook until smooth, season and serve with croutons.

If the soup is too thick it may be thinned with a little hot milk or water.

To make the soup richer, add one-half cup cream or one beaten egg, immediately before serving.

The flour is used in the cream soups as a thickening and binding material. Heat causes a softening of the starch which serves to bind the liquid and solid parts of the soup together. The butter and flour may be added in the following ways:

1. Melt butter and stir in dry ingredients.
2. Mix butter and flour together, cold.
3. Flour blended with a little cold milk.

WHITE SAUCE.

1 c. milk, 2 tbsp. butter, 2 tbsp. flour, ¼ tsp. salt, ⅛ tsp. pepper.

Sift the dry ingredients together; melt the butter in a saucepan and add the dry ingredients, pressing the lumps with the back of the spoon. Add the milk gradually and cook until smooth.

White sauce is used on cream toast, green vegetables, creamed meats and fish, croquettes and as a foundation for cream soups.

CREAM OF GREEN PEA SOUP.

1 qt. milk, 1 can peas, 2 tbsp. butter, 2 tbsp. flour, ½ tsp. salt, ⅛ tsp. pepper.

Cook the peas until tender and press through a strainer. Blend with milk, seasoning and flour mixed with the butter, according to directions for making cream soup.

CREAM OF CELERY SOUP.

1 pt. boiling water, 1 pt. milk, ½ small onion, 3 tbsp. butter, 3 tbsp. flour, ½ tsp. salt, spk. pepper.

Wash the celery, cut into pieces and boil in water until tender. Press the celery through a strainer. Cook the milk and onions together ten minutes and add the milk to the sifted celery. Thicken and season according to directions.

POTATO SOUP.

3 potatoes, 3 c. milk, 1½ c. water, 1½ small onions, 3 tbsp. flour, 3 tbsp. butter, 1½ tsp. salt, ⅛ tsp. pepper, 1 tbsp. parsley.

Boil the potatoes until soft; then drain and mash them. Cook the onion in the milk, and when the potatoes are mashed, add to the scalded milk salt and pepper. Rub through a strainer and heat. Add the flour and butter, according to directions; cook until smooth and serve with croutons. Beef drippings may be used in place of butter.

TOMATO BISQUE.

1 pt. tomatoes, 2 tbsp. butter, 2 tbsp. flour, 1 tsp. sugar, 1 tsp. salt, 1 qt. milk, spring parsley, ¼ tsp. soda, ¼ tsp. pepper, 1 bay leaf.

Put the tomatoes on with the spices and simmer ten minutes, then rub through a strainer. Scald the milk and add the butter, flour, salt and pepper according to general directions. Return the strained tomatoes to the fire and add soda and sugar, allow to boil up, then add to the thickened milk and serve **at once.** Do not allow the soup to boil after the tomatoes have been added to the milk.

LESSON XI.

CHEESE.

When milk grows sour it separates into a thick, white substance and a light yellow liquid. The thick white part is called the curd, and from it cheese is made by subjecting it to different degrees of heat and pressure, by allowing certain bacteria to grow in it and by flavoring and coloring materials.

VARIETIES.

Cheese is made from skimmed milk, i. e., the hard, cheap cheese; from whole milk, i. e., the soft dairy cheeses, and from whole milk to which extra cream is added, as the Neufchatel and Waukesha cheeses. In foreign countries the milk of other animals besides the cow is used in making cheese.

COMPOSITION.

Cheese contains on the average one-third proteid, one-third water and one-third fat. The fat varies greatly according to the milk from which the cheese is made.

Cheese made of skimmed milk is sometimes adulterated by having lard or other cheap fat added to it. It is then called filled cheese.

FOOD VALUE.

Cheese has a very high food value because it contains a great deal of nourishment in a small bulk. Since it is such a concentrated food, only a little should be eaten at a time. Cheese contains no starch, so should be eaten with starchy foods, like bread or macaroni, in place of meat or eggs. It is rather indigestible and for this reason should not be eaten by young children or delicate persons, but for healthy people, especially those who lead an active outdoor life, it is one of the best of foods.

MACARONI AND CHEESE.

Break macaroni into 1 inch pieces. Cook in a large amount of boiling salted water; when tender pour into a colander and run cold water through it, make sauce, add cheese and macaroni to it and pour into buttered baking dish, cover with the crumbs, and bake until brown.

12 sticks macaroni, 1 cup grated cheese, 2 cup white sauce, 1 cup buttered crumbs.

CHEESE STRAWS.

Add salt and pepper to the flour, chop in the butter; add crumbs and grated cheese. Mix thoroughly, then add milk or water. Roll one-fourth inch thick and cut into strips. Bake until brown in a moderately hot oven.

1 c. grated cheese, 4 c. soft bread crumbs, ⅔ c. flour, 1 tbsp. butter, ¼ tsp. salt, ⅛ tsp. pepper, milk to make dough.

RICE AND CHEESE SAUCE.

Make a white sauce of butter, flour, salt and milk. Add cheese to the sauce while hot, serve on hot rice.

2 c. boiled rice, 1 tsp. butter, 1 tsp. flour, 1 c. milk, ¼ tsp. salt, ½ c. grated cheese.

LESSON XII.

EGGS.

An egg consists of shell, membrane, white and yoke.

COMPOSITION.

Water, albumen, fat and mineral matter.

a. Albumen is a tissue-builder, found in both the white and the yolk. The white is nearly pure albumen.

b. Water in both white and yolk.
c. Fat in yolk in form of oil.
d. Mineral salts in both.

EXPERIMENTS.

Experiment 1. Effect of cold water on albumen?
Experiment 2. Effect of acid on albumen?
Experiment 3. Effect of heat on albumen?
How does the white of eggs look at 150° F.? 185° F.? 212° F.?

EXPERIMENTS TO FIND OUT THE BEST TEMPERATURE FOR COOKING EGGS.

Experiment 1. Cook eggs in boiling water three minutes.
Experiment 2. Put an egg in boiling water, remove from fire and let stand, covered, from 8 to 10 minutes.
Experiment 3. Put egg in cold water, bring to boiling point. Give results.

FOOD VALUE.

Eggs form another complete food like milk, but are so highly concentrated it is necessary to use them with food rich in starch (bread, potatoes, etc.)

SELECTING AND TESTING EGGS.

a. Fresh eggs should have a thick, rough shell and feel heavy.
b. Hold egg between your eye and the light. If clear, it is fresh.
c. Drop the egg into cold water. If it sinks it is fresh.
d. Shake the egg, holding it near your ear. It the contents rattle, it is somewhat stale.

PRESERVATION OF EGGS.

a. Keep eggs in a cool, dry place.
b. Eggs may be preserved by packing them, small end down, in bran, lime, sand or sawdust; by immersing them in lime water; or by coating them with fat. Anything to keep the air out.

SOFT-COOKED EGGS.

For two eggs allow one pint of water; for each additional egg, an extra cupful. Put the water in a saucepan, let it come to the boiling point. Place the eggs in the water with a spoon, and cover the saucepan. Remove at once from the fire, and let stand, covered, about ten minutes, according to the size of eggs.

HARD-COOKED EGGS.

Cook in the same manner as soft-cooked eggs, placing saucepan on back of stove, where the water will keep hot, but not boil, for 30 minutes.

POACHED EGGS.

Prepare a slice of buttered toast for each egg, and keep it hot. Have ready a shallow pan containing enough boiling, salted water to cover the eggs, allowing 1 teaspoonful salt for one pint water.

Break egg into saucer, and slip it carefully into the water. Cook

until the white is firm, and a film forms over the top of yolk. Pour water over the yolk with a spoon, if necessary. Remove eggs from water with a skimmer, drain, trim off rough edges and place each egg on a slice of toast. Add salt, pepper and butter to taste. Muffin-rings or egg-poachers are often used to keep eggs in shape.

STUFFED EGGS.

6 eggs, 1 tsp. butter, ¼ tsp. mustard, ⅛ tsp. pepper, ¼ tsp. salt, a few drops of vinegar.

Cook 6 eggs 30 minutes. Remove the shell and cut lengthwise. Remove the yolks, mash the yolks; add butter, salt, pepper and mustard. When smooth, add a few drops of vinegar. Fill the whites with the mixture. Smooth the top. Arrange each half on a bed of fine parsley or lettuce. If liked, add half the quantity of potted or deviled ham or tongue.

LESSON XIII.

EGGS.—Continued.

FOOD VALUE.

Eggs are called one of the few perfect foods, as they contain all the necessary constituents required by the body.

They are nutritious as meat and fish, but taken alone are a too concentrated food.

What should be eaten with eggs?

Raw albumen, as found in eggs and oysters, is digested with very little change.

Why are raw eggs and oysters given to invalids?

Albumen contains nitrogen, the element essential to tissue-building.

Plants draw nitrogen from the soil, animals obtain it from their foods, neither are able to make use of it as found in the air.

BEATING EGGS.

Beating entangles much air in fine bubbles in the albumen.

Beat yolks in a bowl with a fork or Dover beater until thick and light colored.

Beat whites on a plate with a fork or wire beater; or in a bowl with a beater. Eggs are beaten slightly with whites and yolks are well mixed.

Whites are beaten stiff when they are thick and can be cut with a knife; they are dry when flaky.

PLAIN OMELET.

4 eggs, ½ tsp. salt, ⅛ tsp. pepper, 4 tbsp. milk or water, 1 tbsp. butter.

Separate yolks from whites. Beat the yolks until thick; add salt, pepper and milk. Beat the whites until dry; cut and fold them into first mixtures. Butter sides and bottom of a hot omelet pan; turn in the mixture, spread evenly. Cook slowly until well puffed up and a delicate brown underneath; place the pan on the grate of the oven to cook the top. The omelet is cooked if firm and dry when touched by the finger.

Fold over, turn onto a hot platter and serve immediately. If desired, pour one cup thin white sauce around the omelet.

SCRAMBLED EGGS.

Beat eggs slightly, add salt, pepper and milk. Put the butter into a hot, smooth omelet pan; when melted, pour in the mixture. Cook until a creamy consistency, stirring from the bottom of the pan as it thickens. Serve on slices of hot buttered toast.

5 eggs, ½ c. milk, ½ tsp. salt, ⅛ tsp. pepper, 2 tbsp. butter.

EGGS A LA GOLDEN ROD.

Cook the eggs 30 min. Make white sauce. Separate the yolks and whites of the eggs. Chop the whites, and add to the sauce. Arrange four slices of toast on a platter, pour sauce over it. Rub the yolks through a strainer or vegetable press over the top. Cut the remaining slice of toast into points. Garnish with the toast points and parsley. Serve four persons.

3 hard-cooked eggs, 1 c. thin white sauce.

White Sauce — 1 cup milk, 1 tbsp. butter, 1 tbsp. flour, ½ tsp. salt, ⅛ tsp. pepper, 5 slices toast.

LESSON XIV.

EGGS AND MILK.

For custards be sure the eggs and milk are perfectly fresh.

CUP CUSTARD.

Mix eggs slightly and stir in the sugar and salt, then slowly the hot milk. When sugar has dissolved, pour into cups (about six) and grate a little nutmeg over each custard. Set the cups in a pan of hot water, and bake in a moderate oven till a pointed knife inserted in custard comes out clean. Do not let the water in the pan boil. Serve plain or with caramel sauce.

1 qt. scalded milk, 4 to 6 eggs, ½ c. sugar, ¼ tsp. salt, nutmeg.

SOFT CUSTARD.

Heat milk in a double boiler. Mix egg yolks with sugar and salt. Pour hot milk over this mixture till the egg is all removed from the side of the bowl. Return to double boiler, and cook till custard coats the spoon, stirring constantly. Strain, and, when cool, flavor. If the custard curdles, pour into a cold dish, and beat vigorously with a Dover eggbeater. If desired, the whites of eggs may be beaten stiff, poached in hot water, and served on top of custard.

2 c. milk, 3 egg yolks, ¼ c. sugar, ⅛ tsp. salt, ½ tsp. vanilla.

TAPIOCA CREAM.

Soak tapioca in enough water to cover, in double boiler. When the water is absorbed, add the milk and cook till transparent. Beat sugar and salt into the yolks of eggs, and pour the hot tapioca over the mixture, stirring well. Return to double boiler quickly, and cook two or three minutes. Remove from fire, add vanilla, and fold in the stiffly beaten whites of eggs. Serve cold.

4 tbsp. pearl tapioca or 2 tbsp. minute tapioca, 1 pt. milk, 2 eggs, ⅓ c. sugar, ¼ tsp. salt, 1 tsp. vanilla.

LESSON XV.

MEAT.

Meat is the flesh of animals used for food.

Meat { 1. Domestic animals. 2. Game. 3. Poultry.

1. The flesh of cattle, sheep and swine, is called beef, mutton and pork. The flesh of the calf is called veal, and that of the lamb, lamb.

2. The flesh of wild animals and birds is known as game.

3. The flesh of barnyard birds is known as poultry.

The flesh of mature animals is more nutritious and more easily digested than that of the young.

Beef is the most nutritious meat; mutton ranks next; pork is nutritious, but difficult to digest; lamb is tender, but not as valuable as mutton; veal is the least nutritious; it is liked for its flavor and to give variety.

Good meat is firm, elastic, and a bright, uniform color when first cut; the fat is firm and light straw color to pale yellow. Lean meat is muscle. Much used muscle absorbs much food material, making rich, juicy meat, but not always of tender fibre. (Why?)

Structure of meat—Muscle, tissue, fat, bone, tendon, juice and skin.

BONE.

Experiment 1. Soak a piece of bone in vinegar several days. What change takes place in bone? What does the acid take out?

Experiment 2. Lay a piece of bone on a hot fire. What change takes place? What part burns away?

Bone is the hardest animal tissue; it is about one-half water, one-third mineral substance, and one-sixth animal matter, mostly gelatine.

LEAN MEAT.

Experiment 1. Examine carefully a small piece of lean beef. Scrape with a knife until only fiber is left. What do you see?

Experiment 2. Cut a piece of beef into small bits, cover with cold water. What happens?

Experiment 3. Sprinkle a piece of meat with salt. What happens?

Experiment 4. Heat some of the juice of meat in the tube. Compare with white of egg.

Experiment 5. Pour boiling water over a small piece of meat. Why does not the water become red?

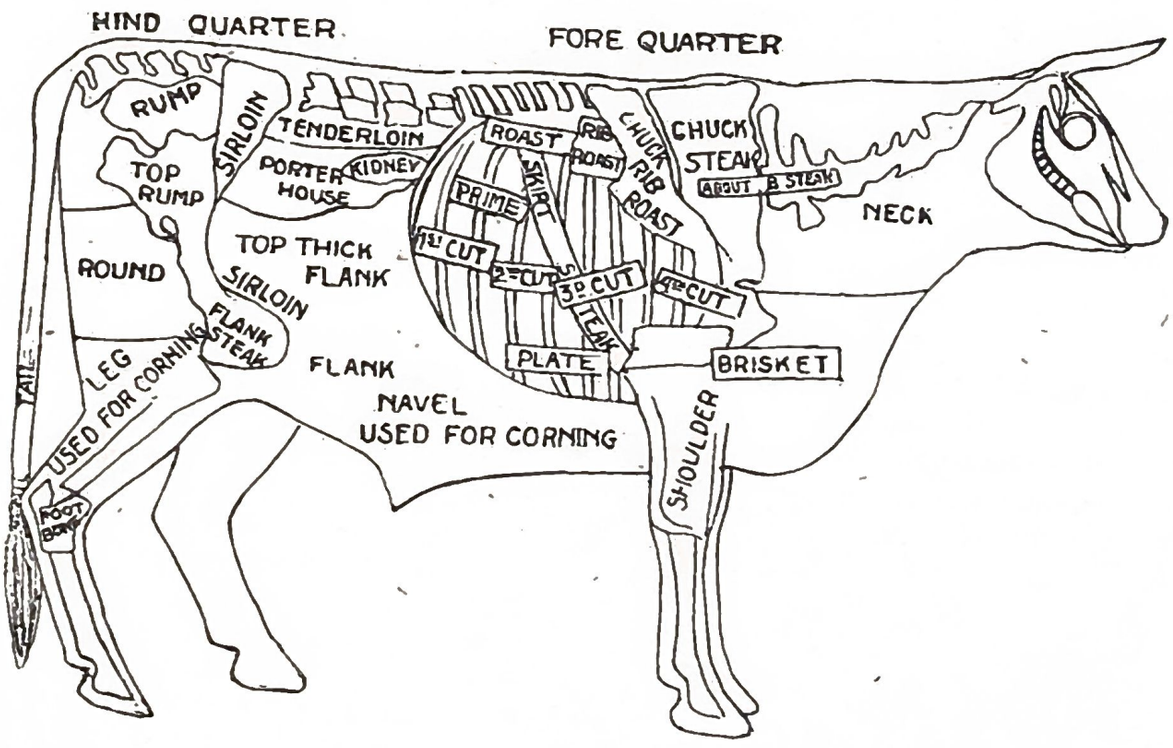
All muscular tissue is made up of bundles of tube-shaped cells filled with juice. These tubes are bound together by a web of white connective tissues threaded by tiny blood vessels and streaks of fat. The more connective tissue the tougher the meat.

The contents of the muscle fiber, or tubes, consists of a jelly-like substance, composed of muscle proteids combined with water containing albumen, mineral matter and the substances which give flavor and color to meat. These substances and the albumen dissolved in the liquid between and around the fibres form the juice of the meat.

METHODS OF COOKING.

Meat is cooked to improve the flavor and appearance, also to kill germs or other organisms which may be present, and to soften fiber and connective tissue. It is prepared so as to extract the juice, as in soups, broths and beef tea; to retain the juice, as in boiling, roasting, broiling and frying, or it may be a combination of both methods, as in stews, where part of the juice is retained in the meat and part drawn out to enrich the gravy.

Loins.—Best quality for roasts and steaks.
Rump, Tough.—Pot roast and steak.
Round.—Fair steak, beef tea, beef loaf.
Top Sirloin.—Fair steak and pot roast.
Prime Ribs (Six Ribs).—Fine roast.
Blade (Three Ribs).—Fair roast.
Chuck (Four Ribs).—Pot roast and stew.
Neck.—Stews and soup.
Brisket.—Corned and boiled.
Navel.—Corned and boiled.
Flank.—Steak, boiled, stew.
Shoulder.—Soup.
Shin.—Soup.



LESSON XVI.

COOKING OF TOUGH MEATS.

The toughness of a piece of meat depends on the amount and quality of the connective tissue, and therefore the meat from the parts of the animal where the muscles are not used very much is more tender than from the parts which are exercised a great deal. Exercise also draws a large quantity of blood to the muscles, consequently tough muscles contain more juice than the other muscles. Tough cuts of meat are inexpensive, and, if properly cooked so as to render the connective tissue digestible, have as high, if not higher, food value than the tender cuts.

In order to soften and dissolve the connective tissue, tough cuts of meat must be cooked in moist heat. There are three ways of doing this—stewing, boiling and braising.

By boiling is meant to plunge the meat into boiling water. Cook at this temperature 10 to 15 minutes, and then simmer until the meat is tender. By this means much of the juice and flavor is kept in the meat. Braising is the cooking of meat with a small amount of water in the oven in a tightly covered pan. Cuts not tender enough for roasting, but of better quality than those used for stews, are cooked in this way.

The purpose of stewing meat is to keep part of the juice in the meat, and to extract part to flavor the gravy, so some of the meat is put on in cold water and the remainder is browned in the frying-pan before adding. Meat for stews should contain some bone and fat. The bone makes the stew gelatinous and the fat gives the desired richness. Various vegetables are used in stews to give flavor and thickening, and different herbs and spices to season them. By far the best way to cook stews is in a double boiler; then one can be sure that the temperature of the stew never reaches the boiling point.

BEEF STEW.

Remove the fat and cut the meat into 1-inch pieces; put aside ½ cup of the best pieces of meat, put the rest of the meat and the bone into the cold water and soak for 1 hour. Then heat until it bubbles. Season the ½ cup of meat and roll it in flour. Melt the fat in a frying-pan, remove the scraps, brown the sliced onion and then the floured meat in the hot fat; add both to the stew, and cook for two hours at the simmering point. Add the vegetables and flour which has been mixed with ½ cup cold water, and cook 1 hour or until the meat and vegetables are tender. Remove the bone. Season and serve.

2 lbs. beef from leg.
1 onion cut in slices,
½ c. carrots cut in dice.
½ c. turnips cut in dice,
4 potatoes cut in ½-inch slices, 1 tsp. salt, ¼ tsp. pepper, 2 tbsp. flour, 4c. water.

GENERAL DIRECTIONS FOR ROASTING.

Wipe meat, trim and skewer into shape. Dredge all meat except beef with salt, pepper and flour. Place on rack in dripping-pan in hot oven.

When the meat is brown, cover bottom of pan with hot water, reduce the heat and cook more slowly.

TIME TABLE FOR BROILING

Steak, 1-in. thick	7 to 10 min.
Steak 1½-in. thick	10 to 15 "
Mutton chops	7 to 10 "
Spring chicken	20 "
Fish	15 to 20 "

TIME TABLE FOR ROASTING.

Beef ribs (rare)	per lb.,	8 to 10 min.
Beef ribs (well done)	"	12 to 15 "
Beef, round	"	12 to 15 "
Mutton, leg (rare)	"	10 "
Mutton, leg (well done)	"	15 "
Mutton, loin (rare)	"	8 "
Mutton, shoulder, stuffed	"	15 "
Lamb (well done)	"	18 to 20 "
Veal (well done)	"	20 "
Pork (well done)	"	30 "
Chicken	"	15 "
Goose	"	18 "
8-lb. turkey		1¾ hrs.
Large turkey		3 hrs.

BEEF LOAF.

Mix all the ingredients together. Shape into a loaf and turn out into a baking-pan. Dredge with salt, pepper and flour. Put bits of butter on top. Set into a hot oven, and when meat is brown cover bottom of pan with hot water. Baste every fifteen minutes. Bake large loaf one hour; the small ones, one-half hour.

2 lbs. round steak ground up with 1-inch cube of fat pork, 1 c. crumbs, 1 tsp. salt, ¼ tsp. pepper, sage or chopped onions, 1 beaten egg.

BROWN GRAVY.

Put fat in pan; when melted, add flour. Stir till smooth, then add water. Cook till thickened. Strain and season with salt and pepper.

3 tbsp. fat, 3 tbsp. flour, 1½ c. boiling water.

CASSEROLE OF RICE AND MEAT.

Line a mould with part of the rice. Fill center with meat mixed with seasoning, cover with rice. Steam 45 minutes. Serve with tomato sauce.

This may be made into balls—tie cheese cloth around the rice balls, let boil about 15 minutes.

2 c. cooked rice, 2 c. beef, mutton, veal or chicken, ½ tsp. salt, 1 egg, 1-16 tsp. pepper few grains cayenne, 1 tsp. onion juice, ¼ tsp. lemon juice, water to moisten.

LESSON XIX.

FISH.

As ordinarily used, the term fish includes besides the backboned fish, many other forms of sea food, such as oysters, clams and other mollusks, lobsters, shrimps, crabs, terrapin and turtle.

The backbone forms of fish are divided into two great classes—Fresh Water Fish, and Salt Water Fish, and these are subdivided into the white-meat fish or those having fat only in the liver, such as red snapper; and the dark meat fish, or those having fat distributed over the body, such as salmon or mackerel.

FOOD VALUE.

The composition of fish is very similar to that of lean meat and should hold the same place in our diet. It is chiefly valuable for the variety which it furnishes, and may be prepared in a number of ways, such as steaming, broiling, frying, and baking. Fish should be served with some food containing starch or fat, as it is lacking in these principles.

BAKED FISH.

To Select the Fish.—The flesh should be firm, the eyes bright and the gills bright red. Fish brought far inland should be dressed before being shipped.

To Clean the Fish.—Rest the fish on the back and cut on the under side, so as to expose the entire body cavity. Remove all the internal organs, being careful not to break the gall sac. The kidneys lying directly under the backbone, should be scraped away. Wash quickly, wipe out with a clean towel, and, if the fish is not to be used at once, sprinkle with a little salt and put away in a cold place.

Directions for Baking.—After the fish has been cleaned, remove the eyes, and fill the body cavity with dressing, allowing room for the dressing to swell slightly. Sew up the fish, using strong thread; skewer and tie in the shape of the letter S. Butter and dredge with flour and place on a rack or fish sheet in a baking pan. If the fish is very dry, cut gashes in it crosswise and insert strips of salt pork. When the fish is brown and the flesh may be pierced without the juice running out, remove the string and skewers, garnish with lemon and parsley and serve.

DRESSING FOR BAKED FISH.

Mix all together and add enough boiling water to bind the crumbs together.

1 c. cracker crumbs, 1 tsp chopped pickle, 1 tsp. capers, 1 tsp. chopped parsley, 1 tsp. scraped onion, 1 egg, ¼ tsp. salt, ⅛ tsp. pepper, 2 tbsp. melted butter.

STEAMED FISH.

Skin and cut the meat from the backbone, cutting the meat as close to the bone as possible.

Butter a plate, lay on the fish, cover with another plate and steam over hot water from 20 minutes to ½ hour. This may be cooked in the oven in the same manner.

SCALLOPED SALMON.

Flake the salmon with a fork. Place in a baking dish. Make white sauce of butter, flour, milk, pepper and salt. Pour white sauce over salmon. Brown crumbs in melted butter, using ¼ c. butter to 1 c. crumbs. Cover top with brown crumbs. Place in a hot oven until mixture is heated thoroughly about fifteen minutes. If desired, a layer of crumbs may first be placed in the dish, then a layer of salmon, then one of cream sauce, until all is used.

1 can salmon, 2 c. milk, 2 tsp. butter, ½ tsp. salt, ¼ tsp. pepper, 2 tsp. flour.

HOLLANDAISE SAUCE.

Cream the butter, add the yolks of the eggs, and beat well together. Then add the lemon juice, salt, paprika and hot water slowly to be creamed, yolks and butter. Cook in a double boiler, stirring constantly until the sauce becomes like a thick cream. When done remove from the fire and stir or beat with a Dover egg-beater about five minutes. This is served hot with fish, or it may be served with cold meats or fish.

2 c. butter, yolks 4 eggs, juice ½ lemon, ½ tsp. salt, ¼ tsp. paprika, 1 c. hot water.

CODFISH BALLS.

Wash fish in cold water, pick in small pieces. Cut potatoes in cubes, cook with fish until potatoes are soft. Drain through a strainer, return to kettle and wash thoroughly, add butter, egg well beaten, and pepper. Beat with a fork. Take up by spoonfuls, and fry in deep fat, drain on brown paper.

1 c. codfish, 2 c. potatoes, 1 egg, ½ tbsp. butter, ⅛ tsp. pepper.

DRAWN BUTTER SAUCE.

Mix flour, salt and pepper with one-half the butter, pour on the water, and stir over the fire until the sauce boils. Add the rest of the butter in bits, stirring until it is absorbed. Serve on fish.

3 c. butter, 3 tbsp. flour, 1½ c. water, ½ tsp. salt, 1-16 tsp. pepper.

HOT TARTAR SAUCE.

Mix the vinegar, lemon juice, salt and sauce and heat over hot water. Brown butter and add very slowly to this mixture; keep warm, but do not boil, and serve with broiled fish.

⅓ c. butter, 1 tbsp. vinegar, 1 tsp. lemon juice, ¼ tsp. salt, 1 tbsp. Worcestershire sauce.

TABLE OF FOODS.

ORGANIC FOODS.

I. Proteids.

Tissue builders.
1. Albumen in meat.
2. Albumen in milk
3. Albumen in eggs.
4. Casein in milk
5. Legumen in peas, beans, etc.

II. Carbo-hydrates.

Yield heat and energy.
1. Starch.
2. Sugar.

III. Fats.

Produce heat.
1. Fat of meat.
2. Butter.
3. Cream.
4. Nuts.
5. Olive Oil.
6. Oil of grains.

INORGANIC FOODS.

I. Mineral salts.

Build bone and nerve tissue. Purify the blood.
1. Potash.
2. Soda.
3. Phosphates of lime, etc.
4. Sulphur.
5. Iron.
6. Sodium-chloride (common salt.)

II. Water.

Purifies the body.
Regulates temperature of body.

III. Air.

Oxides food in body.

LESSON XX.

FLOUR.

KINDS.

Wheat, rye, corn, buckwheat, rice, barley and some other grains. They are milled by cleansing, grinding and bolting.

Wheat is an annual grass of unknown origin and grows in all moderate climates. When it is ripe and ready to cut, the grain is a light yellow; then it is separated from husk and stock. Each grain of wheat has four coatings; the outside is hard and called bran; the next contains gluten; the third, fat and germ; the fourth, or center, starch.

There are two kinds of wheat, and they yield different flour.

Winter or Soft Wheat.—Sown in the fall; endures cold and dampness of the winter; is soft and starchy.

Spring or Hard Wheat.—Sown in spring; grows up quickly and is hard. Grown mostly in Northern States.

This spring wheat yields a flour rich in gluten, makes an elastic dough, necessary to produce light bread. It is known by its creamy

color, its greater capacity for absorbing water, its gritty feeling, and by caking slightly when squeezed in the hand.

For cake or pastry, flour made from winter wheat is more desirable. Why?

Experiment 1. Mix one-fourth cup of flour to a stiff dough with a little water; knead in a fine strainer, set in a bowl of water. What is left in the strainer? Feel it. Spread some to dry. Heat some in an oven. What happens?

Experiment 2. Test sediment in water in two ways.

COMPOSITION OF WHEAT.

Wheat contains all food stuffs necessary for growth of body.
Starch, fat, sugar, water, gluten and mineral salts.
Gluten is valued as a tissue-builder.
Mineral salts are bone and nerve builders.

BATTER.

Batter is a mixture of flour and liquid beaten together.

(a) **Pour Batter.** Equal mixture of flour and liquid.

(b) **Drop Batter.** One measure of liquid to two measures of flour.

A mixture of flour and liquid when cooked would be hard and indigestible. It needs something to lighten it. The simplest means would be by beating air into it. Beating forms small bubbles, which expand when heated. Compare with soap bubbles. Baking hardens the walls of the bubbles and prevents them from breaking.

BATTERS LIGHTENED WITH AIR AND STEAM.

Eggs are a great help in making mixtures light. The cold air which has been beaten into the eggs expands, as soon as the mixture gets hot, to several times its original volume. The walls of the little air-cells consist of egg-albumen, which hardens almost immediately, preventing the escape of the heated air. Thin batters like the popover mixture contain more water than is needed to combine with the starch of the flour. So some of it is changed to steam, which helps in raising the mixture.

POPOVERS.

Mix salt and flour; add milk gradually. Add egg, unbeaten, and the melted butter. Beat five minutes with a Dover egg-beater. Pour into hot buttered iron gem pans or popover cups, and bake thirty to thirty-five minutes in a hot oven.

1 c. flour, ¼ tsp. salt, ⅞ c. milk, 1 egg, 1 tsp. melted butter.

PLAIN GRIDDLE CAKES.

Mix dry ingredients and sift them together several times, cut in the butter. Separate the yolks and whites of the eggs, and add the milk to the yolks. Add this mixture to the dry ingredients and fold in the whites of eggs.

1 qt. flour, 1 tsp. salt, 4 tsp. baking powder, ¼ c. butter, 3 eggs, 3 c. milk.

CREAM PUFFS.

Heat the butter and water until the water comes to a boil. Add the flour all at once, and mix thoroughly. Cook, stirring constantly, until the mass leaves the sides of the pan in a smooth ball of dough. Add the eggs unbeaten and one at a time. Beat until thoroughly mixed. Drop by tablespoonfuls on buttered baking sheets and bake in a moderate oven thirty or thirty-five minutes. When cool, fill with whipped cream, sweetened and flavored, or with cream filling.

1 c. hot water, ½ c. butter, 1 c. pastry flour, 4 eggs.

CREAM FILLING.

Mix the flour, sugar and salt; add the hot milk, and cook until thick and smooth. Pour this into the eggs which have been beaten slightly, and cook over hot water for a few minutes. Remove from fire, and when cool add flavoring.

½ c. flour, ⅞ c. sugar, ⅛ tsp. salt, 2 c. hot milk, 2 eggs, 1 tsp. vanilla.

LESSON XXI.

BATTERS MADE LIGHT WITH SODA.

With the exception of wheat, corn is raised more than any other grain in North America. It contains a great deal of starch, and more fat than any other cereal, and is, therefore, a good winter food. It also contains a large amount of muscle-building substance and mineral salts, and is good food for strong, active people.

From corn are made hominy, grits, cornmeal, cornstarch and corn flour. The grains of corn are first dried, then ground up fine or coarse to make the different products.

Cornmeal spoils very easily, so keep only a small amount on hand at a time.

Cornmeal is scalded to soften the starch; the time in the oven is not long enough to thoroughly cook it otherwise.

Experiment 1. Mix soda and sour milk.

Experiment 2. Mix soda and water. Note the results and compare. Baking soda is an alkali, and is made from common salt. It is the only alkali used in cooking.

When an acid is added to an alkali in the presence of moisture, a gas is formed called carbon dioxide, which produces effervescence.

What makes the mixture rise?

Why will not the cornbread made by the following receipt be sour?

CORNBREAD.

Sift meal and scald with boiling water. Allow to cool. Sift flour, salt and soda together and add to cornmeal and egg slightly beaten. Add milk, and, lastly, melted butter. Pour into a hot greased pan, or gem pans. Bake in a moderate oven twenty minutes, or until brown.

2 c. meal, 1 c. flour, 1 c. sour milk, ¾ c. boiling water, 1 tsp. salt, ½ tsp. soda, 1 egg, 1 tbsp. melted butter, lard or drippings.

Mix soda, salt and meal. Add egg well beaten. Melt butter in baking pan. Pour melted butter into meal mixture. Sprinkle pan with a little meal and let brown. Pour milk into the meal, beat smooth and pour into the hot prepared pan. Bake thirty minutes in a hot oven on second grate.

1½ c. cornmeal, 2 c. sour milk, 1 tsp. soda, 1 tsp. salt, 2 eggs, 2 tbsp. butter.

LESSON XXII.

BATTERS MADE LIGHT WITH SODA.—Continued.

MOLASSES.

The sweet juice obtained by crushing the stalks of sugar cane is boiled down to a thick syrup. As it cooks part of it separates into crystals. Molasses is the remaining liquid, which will not crystallize. Owing to recent improvements in sugar making, it is possible to crystallize almost all of the juice, so that there is very little molasses left. In consequence, the substance now sold as molasses is made artificially from glucose, colored and flavored with a little of the true product. In the United States a considerable amount of molasses is made from the sorghum plant. It is never made from the beet.

Molasses contains about 30 per cent of water, a large amount of sugar and certain salts and acids. It is used on account of its agreeable flavors, in making such dishes as gingerbread, steamed puddings, etc. Also to supply the acids necessary to set free the carbon dioxide from the baking soda.

Experiments.—Put a little molasses into a glass; add some baking soda and warm water. What happens? What causes the effervescence? Repeat, using sour milk, cream of tartar, vinegar and lemon juice, in place of molasses. What occurs in each instance? What must the molasses, sour milk, etc., contain in order to bring about this reaction?

TABLE OF AMOUNTS.

½ tsp. soda .....1 c. molasses in a batter
1 tsp. soda .....1 c. molasses in a dough

DIRECTIONS FOR STEAMING.

A mould or tightly covered tin can may be used. It should be thoroughly greased, and, if it has no cover, a strong piece of greased brown paper may be tied over the top. Place the moulds in a steamer over boiling water; or on a rack in a kettle of boiling water; keep the water boiling, and as it boils away replenish with more water of the same temperature. When steamed long enough, place the moulds, uncovered, in the oven for a few minutes.

STEAMED BROWN BREAD.

Sift the dry ingredients together several times. Mix the molasses and sour milk together and add to the dry ingredients. Beat well. Put into greased moulds, and steam three hours.

2 c. cornmeal, 2 c. graham flour, 2 tsp. soda, 1 tsp. salt, 2 c. sour milk, 1 c. molasses.

FRUIT PUDDING.

Mix and sift the flour, salt, baking powder and nutmeg. Add the raisins and currants. Mix the molasses and sour milk with the suet. Combine mixtures, and beat thoroughly. If put into small moulds, steam one and one-quarter hours; if in a large mould, two and one-half to three hours.

2 c. flour, 4 tsp. baking powder, ¼ tsp. salt, ½ c. beef suet finely chopped, ¼ c. molasses ½ c. currants, ½ c. raisins, ½ c. sour milk, ½ tsp. nutmeg.

HARD SAUCE.

Cream the butter, add the sugar gradually, beating until it is light and creamy. Add the flavoring and beat again.

4 tbsp. butter, ½ c. powdered sugar, ½ tsp. vanilla or ¼ tsp. nutmeg.

LEMON SAUCE.

Mix the sugar and flour thoroughly, then add the boiling water slowly. Cook five to eight minutes, stirring constantly. Add the lemon rind and juice, then the butter. Stir until the butter has melted, then serve at once. If the sauce is too thick, add a little hot water. For vanilla sauce substitute one teaspoonful vanilla for the juice and rind of the lemon.

2 c. boiling water, 1 c. sugar, 2 tbsp. flour, 2 tsp. butter, juice and grated rind of 1 lemon.

FOAMY SAUCE.

Cream the butter, add the sugar and vanilla and the yolk of the egg, beaten until light. Add the boiling water slowly. Beat the white until stiff; add this to the other ingredients and beat until the whole mixture is light and foamy.

3 tbsp. butter, ½ c. powdered sugar, 1 tsp. vanilla, 1 egg, ½ c. boiling water.

YELLOW SAUCE.

Beat yolks of eggs until thick; add one-half of the sugar gradually. Beat whites of egg until stiff; add gradually the remaining sugar. Combine mixture and add vanilla.

2 eggs, 1 c. powdered sugar, 2 tsp. vanilla.

LESSON XXIII.

BATTERS MADE LIGHT WITH SODA.—Continued.

STUDY OF SPICES.

Spices are parts of aromatic plants used to season food. They belong to that class of substances spoken of as condiments.

As the term is generally used, condiments are those substances eaten with meat and combined with salt, which is itself a condiment, while spices are usually added to articles containing sugar.

Condiments and spices have no food value, but are valuable in moderate quantities, as they serve to make food more palatable and by their taste and odor stimulate the flow of digestive fluids.

The spices most commonly used are cloves, cinnamon, pimento or allspice, nutmeg, mace and ginger.

Cloves are the flower-buds of an evergreen tree found in the East Indies.

Cinnamon is the inner bark of a tree similar to the laurel.

Cassia is the inner bark of a species of cinnamon called Chinese cinnamon.

Nutmeg is the kernel of the fruit of an evergreen tree.

Mace is the thin covering of the nutmeg.

Ginger is the root of a flaglike plant.

Allspice consists of the berries of the cassia tree. They are called allspice because of their resemblance in aroma to a varity of spices.

GINGER BREAD.

Sift together flour, soda, salt and spices. Cream together the shortening and sugar, add the molasses and stir in part of milk and part of flour until all is added. Add the eggs, well beaten; pour into a greased and floured pan and bake in a hot oven about 30 minutes

½ c. sugar, ⅓ c. shortening, ½ c. molasses, ½ c. sour milk, 1 or 2 eggs, ½ tsp. soda, 2 tsp. ginger, ½ tsp. cinnamon, 1⅞ c. flour.

GINGERBREAD—WITHOUT EGGS.

Sift the flour, salt and spices together; add half the soda to the milk and half to the molasses. Beat each until light, add to the flour and spices, add the melted butter, pour into a greased and floured pan and bake in a moderate oven about 30 minutes.

1 c. sour milk, 1 c. molasses, ¼ tsp. salt, 1 tsp. cinnamon, 2 tsp. ginger, 2 tsp. soda, 4 tsp. butter, 2½ c. whole wheat flour.

PEANUT COOKIES.

Cream butter, add sugar, beaten egg and milk. Sift flour, baking powder and salt and add to first mixture. Stir in peanuts chopped very fine. This makes a stiff dough. Drop onto a greased tin in rough shapes. Press half a nut into the top of each cookie and bake in a moderate oven about 15 minutes.

2 tbsp. butter, ½ c. sugar, 1 egg, 2 tbsp. milk, 2 c. flour, 2 tsp. baking powder, ¼ tsp. salt, ¾ c. peanuts.

TESTS FOR THE OVEN.

A moderate oven will turn a piece of white writing paper light brown in five minutes; a hot oven, in two minutes.

In baking a cake, divide the time into required quarters.

1. The mixture should begin to rise.
2. Continue rising and begin to brown.
3. Continue browning.
4. Finish baking and shrink from the pan.

LESSON XXIV.

DOUGHS MADE LIGHT WITH BAKING POWDER.

A dough is a stiff mixture of flour, liquid and other ingredients.

APPROXIMATE RULE FOR PROPORTIONS.

Soft dough, one measure of liquid to three measures of flour.

Stiff dough, one measure of liquid to four measures of flour.

Pastry flour is most used in baking powder mixtures. When bread flour is substituted, take two tablespoonfuls from each cup. Baking powder mixtures should be handled as little as possible, and cooked as soon as mixed, generally in a hot oven.

Batters and doughs are made light and porous by the presence of a gas, which expands by the heat during the cooking.

The gases ordinarily made use of are air, steam and carbon dioxide.

Carbon dioxide is obtained by the action of yeast during fermentation or is set free by chemical action from different substances containing the elements of which it is composed.

BAKING POWDER.

Experiment 1. Put one-fourth teaspoonful of soda and one-half teaspoonful of cream of tartar into a glass; mix and pour hot water over it. What is the effervescence?

Experiment 2. Put one teaspoonful of baking powder into a glass; pour hot water over it.

Experiment 3. Pour cold water over one teaspoonful of baking powder. Which causes the more rapid escape of gas?

The best baking powders are made of bicarbonate of soda, cream of tartar and a small quantity of cornstarch.

The cornstarch is used to absorb moisture and keeps the mixture dry.

Bicarbonate of soda (cooking soda) is an alkaline substance containing carbon of dioxide. It is made from salt.

Cream of tartar is an acid substance made from crystals called argols, deposited on the sides and bottom of casks containing grape wine.

Acids and alkalies are opposite in their nature.

RECEIPT FOR BAKING POWDER.

Sift the soda; add cornstarch, and sift five times. Add cream of tartar, mix thoroughly, and sift six or seven times. Keep in tin or glass cans closely covered.

¼ lb. bicarbonate of soda, ½ lb. and 1 oz. cream of tartar, ¼ lb. cornstarch.

BAKING POWDER BISCUITS.

Mix and sift dry ingredients. Chop in the shortening with knife until fine like meal. Add about half the milk; then add more gradually to make a soft dough, mixing with a knife; when smooth turn the dough onto a floured board; toss until coated with flour; pat or roll out about one-half inch thick. Cut with a floured biscuit cutter; place close together in a baking pan. Bake in a hot oven twelve or fifteen minutes.

Equal parts of water and milk may be used instead of all milk.

2 c. flour, 3 tsp. baking powder, ½ tsp. salt, 2 tbsp. shortening, about ¾ c. milk.

MUFFINS.

Sift the dry ingredients. Beat the eggs and add with the milk. Add melted butter and beat well. Pour into hot greased muffin pans and bake in a moderate oven about 20 minutes.

1½ c. flour, 2 tsp. sugar, 2 tsp. baking powder, ½ tsp. salt, 2 eggs, ½ c. milk, 4 tbsp. butter.

SHORT CAKE.

Mix the same as biscuits. Divide the dough into two equal parts. Roll and shape one part to fit a tin pie-plate; brush the top lightly with melted butter. Shape the second portion and place over the first. Bake in a hot oven about twenty minutes. When cooked separate the two portions. Place one part on a serving plate, cover with crushed and sweetened fruit and place the other half over it. Garnish the top with fruit or cover with whipped cream. Strawberries, raspberries, peaches or stewed fruit may be used.

2 c. flour, 3 tsp. baking powder, ½ tsp. salt, 1 tbsp. sugar, ¼ c. shortening, about ¾ c. milk.

LESSON XXV.

DOUGHS LIGHTENED WITH YEAST.

Yeast is a vegetable germ or plant of the fungus family. It is the simplest form of vegetable life, being only a small cell with a thin skin, and full of a liquid which contains the germ of life. It is generally oval in shape and so small that it cannot be seen without a very strong microscope. These cells are found in fruit juices and sprouting grains, and they grow by budding off from each other. Like all plants yeast is killed by extreme heat, and its growth retarded by extreme cold. It grows best and quickest at temperatures between 72 and 90 degrees Fahrenheit.

Three kinds of yeast are used for bread-making—dry, liquid and compressed. A good compressed yeast-cake is known by its light, even color.

THE GROWTH OF YEAST BY EXPERIMENTS.

1. Mix one tablespoonful of flour, one of sugar and three-fourths of a yeast cake to a smooth paste with one-fourth cup luke-warm water. Divide the mixture between three test tubes.

2. Place one test-tube in boiling water.

3. Place one test-tube in luke-warm water.

4. Place one test-tube in cold water or cracked ice, and keep at a temperature of 32 degrees Fahrenheit.

5. Put one-fourth of a yeast cake in a test-tube, mix with luke-warm water, and place in luke-warm water; with salt; sugar.

Give results. Compare the amount of gas formed under the different conditions.

Bread dough is the best soil for growing yeast. The yeast changes some of the starch into a kind of sugar, and the sugar into carbon dioxide gas and alcohol. The gas being lighter than the dough, rises, and in its efforts to escape puffs up the elastic glutinous mass to two or three times its original size; when this expansion has reached the desired limit, we check the fermentation by kneading and baking. The alcohol escapes in the oven, some of the starch is changed into gum or dextrine and forms the crust. If the fermentation goes too far acetic fermentation sets in and gives the bread a disagreeable taste and smell.

WHOLE WHEAT BREAD.

½ c. milk scalded, ½ c. water, ½ tsp. salt, 1 tbsp. sugar or molasses, ½ yeast cake, 3 or 3½ c. flour, ¼ c. luke-warm water, 2 tbsp. butter.

Put salt, sugar or molasses in the mixing bowl; add milk and water; when cool, add the yeast that has been mixed with the one-fourth cup luke-warm water, then stir in half the flour; heat and cut with a knife till full of bubbles; then add enough more flour to make a dough stiff enough to knead; turn out on a slightly floured board, leaving a clean bowl. Knead until smooth and elastic. Shape into loaves; place in a greased pan, brush over with melted butter. Cover, let rise to double its bulk and bake in hot oven about three-quarters of an hour.

BREAD IS BAKED.

1. To kill ferment.
2. To make soluble the starch.
3. To drive off alcohol and carbon dioxide.
4. To form brown crust.

When bread is done, it will not cling to sides of pan, and may be easily removed. Remove loaves at once from pans, and place side down on a wire cooler. If soft crust is desired, cover with a towel during cooling.

LESSON XXVI.

WHITE BREAD.

BREAD—QUICK PROCESS.

½ c. hot water, ½ c. scalded milk, ½ tsp. salt, 1 tsp. sugar, 1 tsp. shortening, ½ yeast-cake dissolved in ¼ c. luke-warm water, about 3 c. bread flour.

Put salt, sugar and shortening into a large bowl; pour on hot liquid. When the mixture is luke-warm, add the dissolved yeast. Stir in flour to make a batter, beat well, then add more flour, a little at a time, to make a stiff dough, mixing with a knife. Turn it upon a floured board, knead until it is smooth, elastic and does not stick to the board. Put into a greased bowl, cover closely and let it stand in a warm place (about 75° F.) until double in bulk. This will take between two and three hours. Knead again until fine-grained, shape into a loaf, or biscuits, and place in a warm greased pan. Cover and put in a warm place. When double in bulk, bake in a hot oven. Bake a loaf fifty to sixty minutes, biscuits fifteen to twenty minutes.

BREAD—SLOW PROCESS.

Use one-half as much yeast. Allow the bread to rise over night. Knead the second time in the morning. Proceed the same as in the quick bread.

PARKER HOUSE ROLLS.

2 c. scalded milk, 3 tbsp. butter, 2 tbsp. sugar, 1 tsp. salt, 1 yeast-cake dissolved in ¼ c. luke-warm water; flour, about 6 c.

Add butter, sugar and salt to milk; when luke-warm, add dissolved yeast and three cups flour. Beat well, cover and let rise until light. Beat again, add flour to make a stiff dough, and knead. Let rise until double in bulk, toss on floured board, pat and roll out about one-third inch thick. Cut with floured biscuit cutter. Crease through the center of each roll with a floured knife handle, brush one-half of each roll with melted butter, fold and press together. Place in a greased pan one inch apart, cover, set in a warm place until double in bulk. Bake in a hot oven twelve to fifteen minutes.

GERMAN COFFEE BREAD.

1 c. scalded milk, ⅓ c. shortening, ¼ c. sugar, ½ tsp. salt, 1 egg, ½ yeast cake, dissolved in ¼ c. luke-warm water, ½ c. stoned raisins, flour.

Add sugar to milk. When luke-warm, add dissolved yeast and flour to make a batter. Cover and let rise. Add salt, melted shortening, egg well beaten, flour to make a soft dough and raisins. Cover and let rise again. Spread in a buttered baking pan, about one inch thick. cover and keep in a warm place until double in bulk. Before baking brush the top with beaten egg and cover with the following mixture:

Melt three tablespoonfuls of butter, add one-third cup of sugar and one teaspoonful of cinnamon. When sugar is partly melted, add three tablespoonfuls of flour. Bake about forty-five minutes.

LESSON XXVII.

CAKE.

There are two classes of cakes—sponge cakes, in which no butter is used, and butter cakes. Sponge cakes include angel and sunshine cakes; and examples of butter cakes are cup cakes, pound cakes, etc.

In making cakes use only the best materials—good butter, fresh eggs and finely granulated or powdered sugar. Use pastry flour and sift before measuring. Never melt the butter; in cold weather the bowl may be slightly warmed before the butter is creamed. Butter cakes are varied by changing the flavoring; by adding nuts, fruits, chocolate or spices. For chocolate cake melt the chocolate over hot water and add after the yolks of the eggs. Dredge raisins and currants with flour and add to the mixture just before the egg whites. Spices are sifted several times with the flour and baking powder.

In making a cake use the following order of work: First get out all necessary utensils and materials, then make out all measurements. Next light the gas range, or, if using a coal range, arrange the dampers so that the oven will be ready by the time the cake is mixed. Next prepare the pans then mix the cake. Before adding the flour to the other ingredients, test the oven.

CHOCOLATE FILLING.

Melt chocolate over hot water, add one-half the sugar and milk, add remaining sugar and yolk of egg. Then cook in double boiler until it thickens, stirring constantly at first that mixture may be perfectly smooth. Cool slightly, flavor and spread.

2½ squares chocolate, 1 c. powdered sugar, 3 tbsp. milk, yolk 1 egg, ½ tsp. vanilla.

ORANGE FILLING.

Mix ingredients in order given. Cook ten minutes in double boiler, stirring constantly. Cool before spreading.

½ c. sugar, 2½ tbsp. flour, grated rind, ½ orange, ¼ c. orange juice, ½ tbsp. lemon juice, 1 egg slightly beaten, 1 tsp. butter.

RULES FOR CAKES.

General rules for the proportions of ingredients in cakes.

In general a cake should contain not more than one-third to one-half as much butter as sugar, and about half as much liquid as flour. Butter or other shortening counts as liquid.

PREPARATION OF THE PANS.

For butter cakes grease the pan with lard or butter, and dredge slightly with flour; for large cakes line the pan with paper and grease it. Sponge cakes are baked in ungreased pans if the pans are kept exclusively for sponge cakes.

THE OVEN.

The oven should be less hot for cake than for bread. It is right for sponge cakes and for butter cakes baked in loaves if it turns a piece of writing paper light brown in five minutes. For layer and small cakes it should be hotter.

The cake is done when it shrinks from the sides of the pan, when a knitting needle put into it comes out clean, or when pressed lightly on top with the finger the cake springs back into place. To turn out of the pan, loosen around the edges with a knife and slip out on a wire cake cooler or a clean towel. If it sticks, turn it upside down, place a damp cloth over the bottom of the pan and let it steam for a few minutes.

PLAIN CAKE.

Cream the butter and add the sugar gradually, then the yolks of the eggs, well beaten. Sift the flour and baking powder together and add to this mixture alternately with milk. Add the flavoring, and last the whites of the eggs, beaten stiff. For chocolate cake add after the egg yolks one and one-half ounces of chocolate melted over hot water. For gold cake use the yolks of four eggs, and for white cake, the whites of four

¼ c. butter, ¾ c. sugar, 2 eggs, ½ c. milk, 1½ tsp. baking powder, 1½ c. flour, 1 tsp. spice or ½ tsp. vanilla.

SPONGE CAKE.

Beat the yolks until light and lemon-colored, add the sugar gradually and continue beating, then the lemon juice and rind and the flour, which has been sifted two or three times. Fold in the whites of the eggs, which have been beaten until stiff. The salt should be added to the egg whites before beating.

Yolks of 5 eggs, 1 c. sugar, 1 tbsp. lemon juce, rind of ½ lemon, 1¼ c. flour, whites of 5 eggs, ¼ tsp. salt.

ANGEL CAKE.

Add the salt to the eggs and beat to a foam; add the cream of tartar and beat until stiff. Sift in the sugar, beating all the time. Sift in the flour, slowly, mixing it with a light folding motion; add the vanilla. Bake in an unbuttered pan in a slow oven about one hour.

1 c. egg whites, 1¼ c. sugar, ½ tsp. cream of tartar, ¼ tsp. salt, 1 c. flour, 1 tsp. vanilla.

BOILED ICING.

Boil the sugar and water together until the syrup spins a thread. Pour slowly on the beaten white and continue beating until of the right consistency to spread.

1 c. sugar, ⅓ c. boiling water, white of 1 egg, 1 tsp. vanilla or ½ tsp. lemon juice.

UNCOOKED ICING.

Sift the sugar, add the orange juice and rind, or the lemon juice, and enough of the boiling water to make it spread smoothly.

1½ c. powdered sugar, 1½ tbsp. hot water, 1½ tbsp. orange juice, rind of ½ orange, or 1 tsp. lemon juice.

LESSON XXVIII.

PASTRY.

GENERAL RULES.

1. To make good pastry use pastry flour.
2. Have everything cold.
3. Always roll the pastry one way.
4. In making a short crust, handle as little and as lightly as possible.
5. If a shining surface is desired, brush with beaten egg or milk.
6. Cook pastry in a hot oven and have the heat greatest at the bottom, so that it may rise before browning.
7. Pastry is much improved if allowed to stand on ice before baking.

Pastry is difficult to digest because the starch grains must absorb water, swell and burst before they can be digested. The small amount of water used in making pastry does not furnish enough liquid to accomplish this. Moreover, the particles of starch in pastry are inclosed in fat, and digestive fluids cannot reach the starch readily.

PASTRY.

Sift flour, salt and sugar together. Chop in lard and add the water slowly, handling lightly. Put the dough on a board, roll out, spread with butter, fold three times and roll like a jelly cake. Cut the pastry across and roll out to fit the size of pie-plate. This will make 4 medium-sized pies.

½ c. butter, ½ c. lard, 1 c. flour, 1 tsp. salt, 1 tsp. sugar, 1 c. ice water.

LEMON PIE.

Mix the cornstarch with a little cold water; add the hot water and boil for five minutes. Remove from the fire, add the sugar and butter well creamed together, and mix with the yolks of the eggs and juice and grated rind of lemon. Line pans with pastry rolled one-eighth inch thick, prick the bottom of the paste, and bake. When almost done, fill the pans to the depth of three-fourths of an inch with the lemon filling and cook until the paste is done. Cover with a meringue made from the whites of the eggs beaten stiff with one tablespoonful sugar to one egg. Cook slowly until slightly brown.

1 c. boiling water, 1 c. sugar, 3 tbsp. cornstarch, 1 tbsp. butter, 2 eggs. Juice and grated rind of lemon.

CHEESE STRAWS.

Roll pastry one-eighth inch thick and cut into two pieces. Sprinkle one piece with grated cheese, seasoned with salt and cayenne pepper or paprika. Place the other half on top of this piece and cut into strips one-half inch wide and five inches long. Bake until crisp and brown.

APPLE PIE.

Line a rather deep pie plate with pastry and fill with tart apples, peeled and cut into slices. Sweeten, using about one cup sugar for a large pie, and season with cinnamon or nutmeg and one tablespoonful butter. Cut a large piece of pastry to completely cover the top and cut in several places to allow the steam to escape. Bake in a moderate oven until the apples are tender and the pastry cooked.

The sugar, butter and cinnamon may be omitted until the pie is done, when the top crust is lifted and the sugar and seasoning sprinkled over the apples. Cook in this manner the apples are finer flavored.

LESSON XXIX.

SALADS.

Salads may be made of fruit, eggs, cheese, fish, meat, cooked and raw vegetables, and these are combined with a dressing containing oil, butter or cream. Three kinds of dressing: French, Cooked, Mayonnaise.

RULES FOR A PERFECT SALAD.

1. Have all ingredients very cold.
2. Have salad well seasoned.
3. Have it attractively garnished.

GENERAL DIRECTIONS.

1. Have meat free from all bone, gristle and fat.
2. Cut meat, vegetables, etc., in uinform pieces.
3. Wash lettuce, parsley and water cress in cold water, shake free from water, and dry in a towel, put in a cheesecloth and place on ice; or let soak for a few hours in cold water.

FOOD VALUE.

The food value of a green salad is not very high, but the salts it supplies, and its refreshing qualities make it very wholesome. A meat, fish or egg salad, served with a cooked or mayonnaise dressing, contains a great deal of nourishment. When such a salad is served, it should be one of the chief foods of the meal.

For dinner or hearty meal, serve green or fruit salad.

FRENCH DRESSING.

Stir the seasonings into the oil, add the vinegar and stir vigorously, until the dressing thickens. Serve with a green salad.

½ tsp. salt, ¼ tsp. pepper, 3 tbsp. olive oil 1 tbsp. vinegar.

COOKED DRESSING.

Mix all the dry ingredients with egg yolks slightly beaten. Add melted butter, milk and lastly hot vinegar. Cook in double boiler until it thickens, stirring all the time.

1 tsp. salt, 1 tsp. mustard, ½ tbsp. flour, 1 tbsp. sugar, ⅛ tsp. cayenne, 2 egg yolks, 2½ tbsp. butter, ¾ c. milk, ¼ c. vinegar.

POTATO SALAD.

Cut cold or freshly boiled potatoes into one-half inch dice. Mix with seasonings. Pour hot cooked dressing over potatoes, and mix lightly with a fork. Chill, arrange in a mound on a bed of lettuce. Garnish with chopped parsley and hard-cooked eggs, or radish roses.

4 c. potatoes, ½ tsp. salt, ¼ tsp. pepper, 2 small onions, sliced.

CELERY AND APPLE SALAD.

Wash and crisp the lettuce. Break the celery into stalks, wash and use the white parts. Cut in pieces about one-half inch in length. Pare tart apples and cut into dice. Mix together, arrange lettuce on individual plates. Fill with celery and apple and place on top a spoonful of salad dressing. If desired, add one-fourth cup pecans or English walnuts to the celery and apples.

2 c. celery, 2 c. apples, 1 c. salad dressing.

GERMAN POTATO SALAD.

Cut in thin slices the cold boiled potatoes. Add the chopped onion. Fry the bacon until brown and add to this the vinegar which has been mixed with the sugar, salt and pepper. Bring to a boil and pour while hot, over the potatoes and onion. Mix thoroughly until the liquid is absorbed.

6 medium sized potatoes, ½ an onion, ¾ tbsp. sugar, ½ c. bacon cut in one-fourth inch cubes, ½ c. vinegar, ⅓ c. water.

LESSON XXX.

GELATINE DESSERTS.

Gelatine is derived from substances contained in the bones, skin and connective tissues of animals. These substances are changed into gelatine by cooking for several hours in boiling water. The connective tissues of young animals are especially rich in gelatine-yielding material, calves' feet, a pure form of gelatine; but the purest form is isinglass, a kind of gelatine obtained from the swim-bladder of fish, especially the sturgeon. Both of these forms are more expensive.

Gelatine is not proteid, although belonging to a class of substances known as gelatinoids, which are closely related to the proteids. It cannot, therefore build tissue, form muscles, nerves, etc., but yields heat and energy, and serves other purposes in the body which cause it to be known as a "proteid-sparer."

Gelatine is very easily digested, and jellies prepared from it form an agreeable addition to the diet during convalescence, as well as in health, although the nutritive value is limited. When first softened by soaking in cold water, gelatine will dissolve readily in boiling liquids, hardening or stiffening to a jelly when cold. Prepared gelatine may be bought in thin strips, or more finely divided, as granulated gelatine.

Do not cook the gelatine; it is likely to give it a disagreeable "gluey" flavor, and boiling will change it so that it will not stiffen.

LEMON JELLY.

Soak gelatine in cold water, add salt; dissolve in boiling water, add sugar and lemon juice, strain, turn into molds that have been wet with cold water, and chill.

1 tbsp. granulated gelatine, ¼ c. cold water, ¾ c. sugar, pinch of salt, 1¼ c. boiling water, ¼ c. lemon juice.

SNOW PUDDING.

Add whites of three eggs, beaten stiff, to lemon jelly when quite thick. Beat with wire spoon until stiff enough to hold its shape, mold. Serve with cream or soft custard.

PUDDING A LA MACEDOINE.

Make lemon jelly: Place a mould in a pan of ice water, pour in mixture one-half inch deep, when firm, decorate with fruit, cover fruit adding mixture by spoonfuls, lest the fruit be disarranged. When firm, add more fruit and mixture; repeat until all is used, each time allowing mixture to stiffen before fruit is added. In preparing this dish various fruits made be used—oranges, bananas, dates, figs, and nuts. Serve with sauce or whipped cream.

LESSON XXXI.

FROZEN DESSERTS.

ICE CREAM.

A frozen dessert most desirable for hot summer days. It is also a good food for many invalids, being wholesome, nutritious and cooling.

Experiment 1. Fill a cup with cracked ice. Take the temperature

Experiment 2. Mix four tablespoonfuls of rock salt with the ice. Watch the thermometer.

Melting ice and salt reach a temperature below the freezing point of water. If packed around some other liquid, they draw the heat from it so fast that it freezes.

DIRECTIONS FOR FREEZING.

Put the ice into a strong canvas bag and pound until very fine.

Use rock salt. Proportions—three measures of ice to one of salt.

Pack ice and salt solidly in the freezer, around the can containing the mixture.

Turn the crank slowly at first, to permit the mixture to become thoroughly chilled, then more rapidly until frozen. Cream frozen too rapidly is coarse-grained.

PACKING.

Ice cream is much better if repacked and allowed to stand at least one hour before serving.

Remove the dasher and repack with ice and salt, using one-fourth as much salt as ice. Cover with newspaper or a heavy cloth.

ICE CREAM.

Mix well, being particular to have the sugar dissolved before freezing.

Vanilla bean pulverized will give the cream a much more delicate flavor than the extract.

1 qt. cream, 1 c. sugar, 1 tbsp. vanilla.

FROZEN CUSTARD.

Scald the milk in a double boiler. Beat the eggs slightly, adding half the sugar, pour the milk slowly into this, stirring constantly. Pour back into double boiler, cook until the mixture begins to thicken, about ten minutes, then add the rest of the sugar. Cool, add cream and flavoring and freeze.

1 pt. milk, 1 tbsp. flour, 1 c. sugar, 2 or 3 eggs, ⅛ tsp. salt, 1 pt. cream, 1 tbsp. flavoring.

LEMON ICE.

Make a syrup of the sugar and water by boiling them five minutes. Add the grated rind of the orange and lemon. Cool, then add the juice, strain and freeze.

4 large lemons, 1 orange, 2½ c. sugar, 1 quart water.

PINEAPPLE SHERBET.

Make a syrup of the sugar and water by boiling them five minutes. Cool, add all other ingredients and freeze.

1 can pineapple, grated; juice 1 lemon, ½ tsp. gelatine (Knox) dissolved, 1 pt. sugar, 1 qt. water.

LESSON XXXII.

INVALID COOKERY.

In preparing food for an invalid, the following points should be kept in mind:

The food should be served in the most pleasing manner possible.

It should be suited to the digestive powers of the patient, and should be served in small quantities, just enough to satisfy hunger or to furnish needed strength.

In a severe illness the doctor prescribes the kind and amount of food to be given. In long and protracted illness it is necessary to take nourishing food in small quantities at frequent intervals. In short spells of illness it is sometimes best to go without food for a day or more, so as to give the system complete rest.

The following foods are easily digested and are given to invalids: Milk, eggs (raw or slightly cooked), beef tea, gelatinous jellies, gruels, well-cooked cereals, raw oysters, juice of oranges, grapes or other fruit.

SERVING FOOD.

Use the daintiest dishes in the house. Place a clean napkin on the tray, if possible a fresh flower.

Serve everything in small quantities, as it is more tempting to the delicate appetite.

Try to surprise the patients by some unexpected food and in this way induce them to take nourishment.

Serve hot food hot and cold food cold.

Remove the tray as soon as the food is eaten, as food should never be allowed to stand in a sick room.

MILK SHERBET.

Freeze the milk and sugar until partially stiffened. Add the lemon juice and freeze until stiff.

1½ c. milk, ¼ c. sugar, ½ lemon.

LEMONADE.

Pare the lemon very thin, using only the yellow rind. Put the rind and sugar in a bowl; add the boiling water, cover tightly and let stand twenty minutes; add the juice and strain. This is very strong and may be weakened with a little ice or cold water.

1 lemon, 3 tbsp. sugar, 1 c. boiling water.

APPLE WATER.

Cut the apple into small pieces, add the boiling water and sugar. Stand twenty minutes. Strain and serve.

1 apple (tart), 1 tbsp. sugar, c. boiling water.

EGGNOG.

Beat the egg; add the sugar, salt and flavoring. Heat the milk and add slowly to the beaten egg. Serve at once. Any flavoring, either spirits, vanilla or nutmeg, may be used.

1 egg, 1 tbsp. sugar, spk. salt, 1 c. milk, 1 tbsp. brandy, or ¼ tsp. vanilla, or ⅛ tsp. nutmeg.

sufficient syrup, use boiling water. Place the rubber on the jar, put on the cover and screw it tight. Turn the jar upside down to see if it is air-tight.

JELLIES.

Wash the fruit, and remove stems and imperfections. Cut large fruit into pieces. With watery fruits, such as grapes and currants, use no water. With apples and quinces, use enough water to cover them. Cook fruit until the juice flows. Remove from the fire and strain. Measure the juice, boil twenty minutes, and add an equal quantity of heated sugar; boil five minutes, or until jelly stiffens when tried on a plate; skim, turn into sterilized glasses, and set aside to harden. Cover with melted paraffin. Keep jellies in a cool, dry place.